

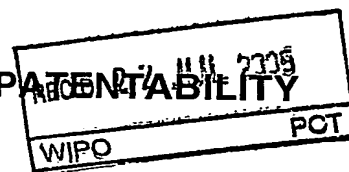
# PATENT COOPERATION TREATY


## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference 040285PCT		<b>FOR FURTHER ACTION</b>		See Form PCT/PEA/416
International application No. PCT/US2004/011796		International filing date (day/month/year) 16.04.2004	Priority date (day/month/year) 18.04.2003	
International Patent Classification (IPC) or national classification and IPC C12N5/00, C12M1/20				
Applicant CARNEGIE MELLON UNIVERSITY et al.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input checked="" type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand  27.09.2004		Date of completion of this report  22.07.2005		
Name and mailing address of the international preliminary examining authority:  European Patent Office - Gitschiner Str. 103 D-10958 Berlin Tel. +49 30 25901 - 0 Fax: +49 30 25901 - 840		Authorized Officer  Cubas Alcaraz, J  Telephone No. +49 30 25901-324		



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/US2004/011796

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-32 as originally filed

**Claims, Numbers**

1-157 as originally filed

**Drawings, Sheets**

1/14-14/14 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/US2004/011796

---

**Box No. IV Lack of unity of invention**

---

1. ☒ In response to the invitation to restrict or pay additional fees, the applicant has:
- ☐ restricted the claims.
  - ☐ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☒ neither restricted nor paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with.
  - ☒ not complied with for the following reasons:  
**see separate sheet**
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
  - ☒ the parts relating to claims Nos. 1-12,13-18(part),19-55,57(part),61-65(part),71(part),87-95(part),98(part),117-121(part),132,133-135(part),136-154 .

---

**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

---

1. Statement

Novelty (N)	Yes: Claims	5,7-12,20-30,32-55,136-152,154
	No: Claims	1-4,6,13-18,19,31,57,61-65,71,87-95,98,117-121,132-135,153
Inventive step (IS)	Yes: Claims	
	No: Claims	1-55,57,61-65,71,87-95,98,117-121,132-154
Industrial applicability (IA)	Yes: Claims	1-55,57,61-65,71,87-95,98,117-121,132-154
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

**Re Item IV**

**Lack of unity of invention**

This Authority considers that there are 3 inventions covered by the claims indicated as follows:

I: Claims 1-12, 13-18 (part.), 19-55, 57 (part.), 61-65 (part.), 71 (part.), 87-95 (part.), 98 (part.), 117-121 (part.), 132, 133-135 (part.) and 136-154, directed to a cell growth substrate comprising an elastomeric membrane of a first material that comprises a first portion having a first elasticity and a second portion having a second elasticity, as well as a method for preparing it, apparatus comprising it and method of culturing cells using such an apparatus.

II: Claims 13-18(part.), 56, 57 (part.), 58-60, 61-65 (part.), 66-70, 71 (part.), 72-86, 87-95 (part.), 96, 97,98 (part.), 99-116, 117-121 (part.), 122-131, 133-135 (part.), 155 and 156 directed to a cell growth substrate comprising an elastomeric membrane of a first material that is at least partially coated with an extracellular matrix-mimetic, as well as a method for preparing it, apparatus comprising it and method of culturing cells using the apparatus.

III: Claim 157 directed to a method of culturing cells, comprising a substrate hhaving a first elastomeric membrane and a removable second elastomeric membrane.

The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows:

The single general concept underlying the invention according to claims 1-157 is the provision of a cell growth substrate comprising an elastomeric membrane. However, documents US-A-4789601 (col. 5, lines 16-30; claim 9) and WO-A-02/46365 (page 7, line 35-page 8, line 9; claim 1) describe substrates suitable for growing cells comprising an elastomeric membrane. Thus, the single general concept is not new.

Neither the description, nor the claims revealed any further features that could be

considered as a "same" or "corresponding" and which could be regarded as "special" technical feature in the sense of Rule 13.2 PCT linking the three groups of inventions. It is concluded that no technical relationship is established involving novel special technical features in the sense of Rule 13.2 PCT. In consequence the three groups of inventions are not so linked as to form a single general inventive concept as required by Article 17(3)(a) and Rule 13.1 PCT.

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Reference is made to the following documents:

D1: US-A-47789601

D2: WO-A-0235990

2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1 and 31 is not new in the sense of Article 33(2) PCT.

2.1 Document D1 describes (col. 3, lines 21-41; col. 4, line 61-col. 5, line 49; claim 9; figures 1-6) a cell growing substrate and an apparatus comprising the substrate, wherein the substrate comprises an elastomeric membrane having embedded carbon particles in the surface layer. It can be assumed that, due to the presence of the carbon particles, the elasticity of the surface layer and that of the rest of the membrane will be different. In any case, the embedded particles have an elasticity which is different to the one of the membrane. Thus, the subject-matter of claims 1 and 31 are not new regarding the disclosure of D1.

2.2 Moreover, document D2 describes (page 3, lines 15-29; page 6, line 15-page 8, line 9; claims 1,5,7,9-19; figures 1-6) a substrate suitable for growing cells, comprising different materials having different elasticity. Thus, the disclosure of D2 anticipates the subject-matter of claim 31.

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/US2004/011796

3. Similar reasoning as in point 2.1 applies, *mutatis mutandi*, to the subject-matter of claims 132 and 153. Accordingly, the subject-matter of those claims cannot be considered as new (Article 33(1)(2) PCT).

4. Dependent claims 2-30, 32-55, 57, 61-65, 71, 87-95, 98, 117-121, 133-152 and 154 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33 (19 (2) and (3) PCT).